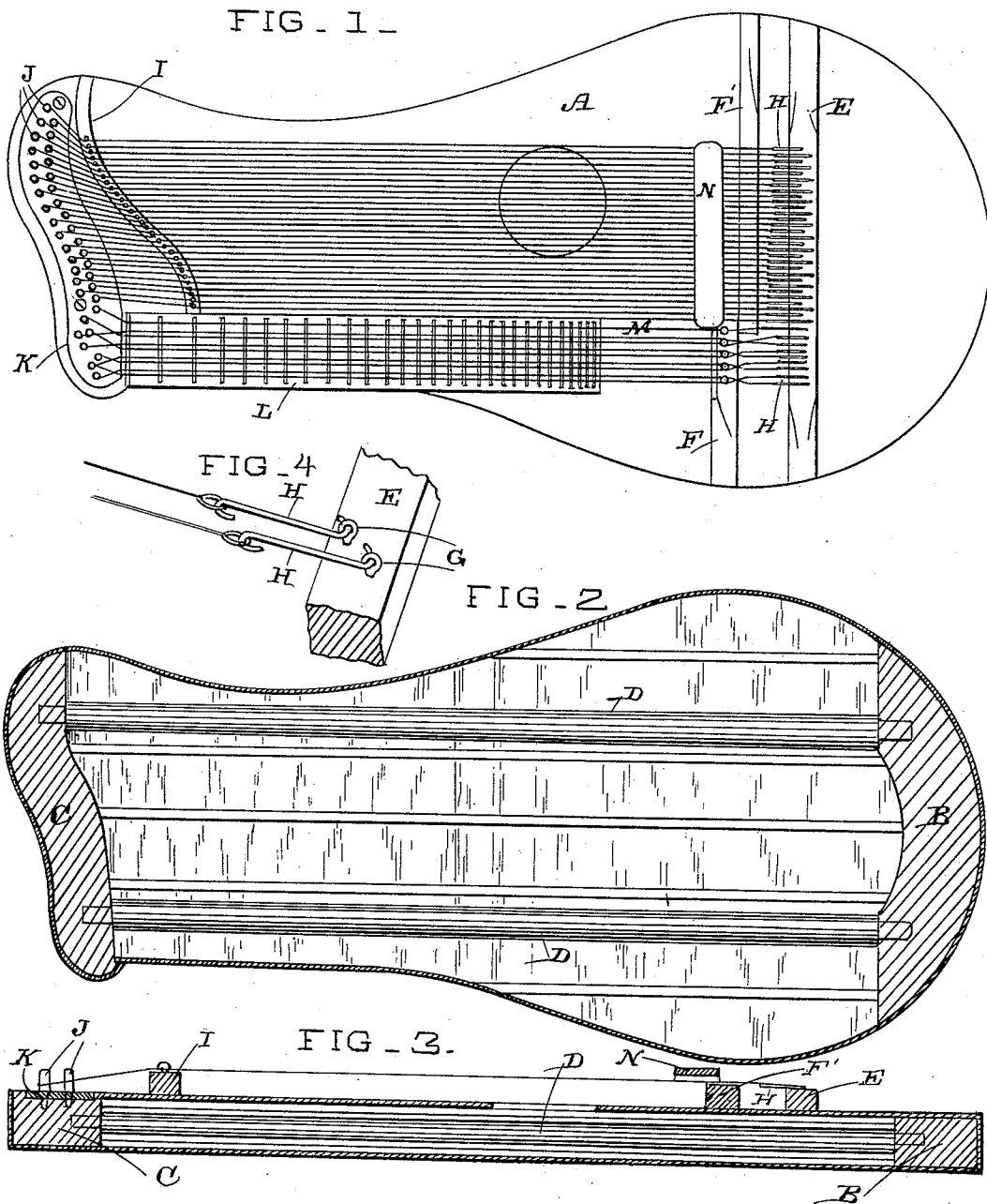


(No Model.)

C. BUCKNER.  
ZITHER.

No. 466,878.

Patented Jan. 12, 1892.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

CHARLES BUCKNER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-FOURTH TO MAX STEIN, OF SAME PLACE.

## ZITHER.

SPECIFICATION forming part of Letters Patent No. 466,878, dated January 12, 1892.

Application filed May 12, 1891. Serial No. 392,490. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BUCKNER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Zithers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in that class of musical instruments called "zithers."

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a top view of my zither. Fig. 2 is a horizontal section. Fig. 3 is a vertical section. Fig. 4 shows the manner of fastening the strings to the bridge.

The object of my invention is to reinforce and strengthen the frame of the zither, so as to enable it to resist the great strain of the strings and prevent the bending of the instrument and its sound-board out of shape, and to allow of the use of an increased number of strings upon the key-board a novel means for connecting the strings with the tail-bridge, all of which, with certain other details, have enabled me to greatly increase the tone and power of the instrument as well as its durability.

A is the sound-board of a zither, as shown in the plan view, the outline being the same as that of the body of the instrument.

In the ordinary construction the rear end of the zither is made straight and the rear ends of the strings pass down over the end and are attached to pegs, passing thence upward over the end and over the tail-bridge, and thence to the upper end or head of the instrument, where they are attached to tuning-pins, by which they are held and the instrument is tuned.

In my invention I make the rear end of the zither circular in shape, and within this end in the interior is fixed a solid block B of wood, shaped to fit the rear end of the instrument. In the head or upper end of the zither is also fixed the solid block C, having holes made in it to receive the tuning-pins. Within the instrument and extending longitudinally from the block B to the block C are the stout

wooden bars or rods D. The ends of these bars are fixed firmly in the blocks B and C, and the bottom, sides, and the top or sound-board being secured at each end to these blocks, it will be seen that the connecting rods or bars will resist all strain of compression which may be brought upon the instrument by reason of the tension of the great number of strings which are employed in this class of instruments. This enables me to use a much thinner sounding-board, and therefore to bring out a much fuller and better tone than could otherwise be done.

In order to still further increase the effect, I make the sounding-board and back of the instrument with the grain of the wood running transversely and the ribs by which they are supported running lengthwise. This enables me to bring the bottom and top of the instrument much nearer together than if the ribs were made to run crosswise, because the longitudinal bars are of such size that transverse ribs would necessitate a much deeper instrument in order to clear these bars. By running the ribs lengthwise, however, the bottom and top may be brought very close to the longitudinal bars, and thus the depth of the instrument is diminished, making it a much better size and shape. Across the sounding-board at the rear end of the instrument and in front of the block B the two bridges E and F F' are fixed upon the top of the instrument. The first bridge E is provided with as many eyes G as there are strings upon the instrument. Each of these eyes has one end of a double-ended hook H engaging it, and the opposite end of the hooks, which lie between the two bridges E and F, receive the rear ends of the strings of the instrument. From these hooks the strings extend across the bridges F and F', thence passing over the upper bridge I and having the upper ends secured to the tuning-pins J. These tuning-pins extend into the block C at the head of the instrument and are turned by means of a key in the usual way, their friction within the holes in the block retaining them at any point to which they may be turned in tuning the strings. The great strain which is brought upon this block, however, will in time twist it out of shape and sometimes break it. In order, therefore, to

strengthen this block and prevent its being thus twisted out of shape, I employ the curved metal plate K, which is made approximately of the shape of the upper end of the instrument and is secured at many points to the top of the block C. This plate has holes bored through it corresponding with the holes in the block which receive the tuning-pins, and by reason of its resisting strength and peculiar shape it serves as a reinforce to prevent the block from being twisted out of shape or broken.

L is the finger-board, having the usual frets across it, and over this finger-board the strings pass, upon which the upper parts of the music are played. The lower ends of these strings pass over the bridges F, as previously described. The bass strings M, which are at one side of the finger-board, pass over the bridge F', and this bridge is set a little farther back than the bridge F. Above this bridge F' is fixed the finger-rest N; but by setting the bridge back, as I have shown, I place this finger-rest a short distance in advance of the bridge and approximately in line with the bridge F. This enables the operator to strike the bass strings at a greater distance from the bridge F' without stretching the hand too far for the purpose, the bass strings being struck by the fingers of the right hand and the treble strings which pass over the finger-board being struck by a thumb fixed upon the thumb of the same hand, while the left hand is employed to press the strings down upon the finger-board. In order to shorten these strings in the bass which are nearest to the finger-board, I have curved the bridge I in such a manner that its inner end comes to a point about opposite the second fret of the finger-board. This enables me to tune these strings, which are of wire and are tuned high, to the proper tone without so much danger of breaking them, while the outward sweep of the bridge gives a sufficient length to the heavier bass strings at the outer side. By this construction and the use of the bracing rods or bars extending longitudinally through the inside of the instrument I am enabled to increase the power of the treble strings which pass over the finger-board by doubling these strings and using two strings tuned in unison for each nut. These strings extend parallel above the finger-board and beyond the upper and lower bridges they cross each other over pins which are set at these points, the strings at the upper end passing to their separate tuning-pin and at the lower end passing through eyes which guide them from the bridge to the hooks, to which the rear ends are attached. The object of crossing the strings at the bridges when a double set of strings are used is to prevent making notches in the bridges. When the bridges are notched, they wear the strings very fast and cause them to break; but by crossing the strings over the pins which stand behind the bridges it will be

seen that the strings are held firmly in place and the top of the bridges may be made perfectly smooth. By this use of double strings I am enabled to increase the power and tone of that portion of the instrument so as to make it proportional to the bass strings, which has not hitherto been possible.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a zither, the solid blocks fixed in the opposite ends of the instrument, in combination with brace-rods extending from end to end of the instrument midway between the sounding-board and the back and out of contact with either, said rods having their ends secured firmly in the end blocks, substantially as herein described.

2. A zither having the solid end blocks, brace-rods extending between said blocks, having their ends secured therein, a sounding-board and back, the grain of which extends transversely across the instrument, and ribs extending longitudinally from end to end of the instrument, glued to the sounding-board and back parallel to and out of contact with the brace-rods, substantially as herein described.

3. In a zither, the sounding-board and back made of wood, having the grain transverse to the length of the instrument, independent longitudinal ribs to which the back and sound-board are respectively glued, solid end pieces fitting the interior of the instrument, and brace-rods having their ends secured in these end pieces and extending from end to end within the instrument midway between the back and front and out of contact therewith, substantially as herein described.

4. In a zither, the tail-bridge extending across the top of the sounding-board, having eyes fixed therein, double-ended hooks, each having one end connected with one of the eyes in the tail-bridge and the other end forming an attachment for a string, substantially as herein described.

5. In a zither, the case and sounding-board, the tail-bridge extending across the rear end of the sounding-board having the eyes, the double-ended hooks for the attachment of strings, the bridges F and F', extending parallel with the tail-bridge and out of line with each other, and the finger-rest supported above the bass strings and in front of the bridge F', substantially as herein described.

6. A zither having the case, the sounding-board, the solid end pieces, the intermediate rods or bars extending longitudinally from end to end of the instrument, and the block bored to receive the tuning-pins at the upper end or head of the instrument, in combination with the curved metallic strengthening-plate secured to the block and having the holes made through it for the passage of the tuning-pins, substantially as herein described.

7. In a zither, the case, the sounding-board, the strengthening-blocks at opposite ends,

and the bars extending between said blocks, the two bridges extending transversely across the sounding-board at the rear end of the instrument, the finger-board having frets across it and the upper curved bridge at the right of the finger-board, over which the bass strings pass, said bridge being curved downward, so that its adjacent end stands opposite the frets of the finger-board below the upper bridge, substantially as herein described.

8. In a zither, the finger-board having bridges at opposite ends and pins behind said bridges, strings extending over the finger-board between the bridges in pairs and crossing each other behind the pins, each pair of strings being tuned in unison, substantially as herein described.

9. In a zither, the bridges and finger-board above which the strings are stretched in pairs, tuned in unison, pins beyond the bridges at opposite ends, about which the strings are crossed, the strengthening-blocks, and brace-rods extending between them longitudinally within the instrument, whereby the sounding-board is relieved from the tension of the strings, substantially as herein described.

In witness whereof I have hereunto set my hand.

CHARLES BUCKNER.

Witnesses:

S. H. NOURSE,  
J. A. BAYLESS.